SHOUT
SHARE
IT

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 458

Contribution from the Office of Markets and Rural Organization,
CHARLES J. BRAND, Chief.

Washington, D. C. ▼ March 31, 1917

HANDLING AND MARKETING DURANGO COTTON IN THE IMPERIAL VALLEY.

By J. G. MARTIN, *Investigator in Cotton Marketing*, and G. C. WHITE, *Specialist in Transportation.*

CONTENTS.

	Page.		Page.
Introduction	1	Storage facilities	9
Necessity for clean picking	2	Sampling	11
Care of seed cotton	4	Classing Durango cotton	12
Ginning Durango cotton	5	Length and character of Durango staple	13
Necessity for good baling and adequate covering	6	Marketing of Durango cotton	14
Tagging, marking, branding, and weighing	8	Transportation facilities and rates	17

INTRODUCTION.

In the fall of 1915, the Office of Markets and Rural Organization of the Department of Agriculture, through cooperation with the Imperial Valley Long-Staple Cotton Growers' Association, rendered investigational assistance to the growers of Durango long-staple cotton in the Imperial Valley of southern California in the handling, classing, and marketing of their product.[1] The investigations were begun about the first of October, the beginning of the cotton-picking season in that section, so that besides the actual investigations an excellent opportunity was afforded not only to examine the condition of the Durango cotton in the fields (see fig. 1), but to inspect the methods of picking, handling, and storing the seed cotton on the farms, to study the methods of hauling the cotton to the gins, its subsequent ginning and baling, and its handling and storage in the yards. The specific investigations made included the manner

[1] Martin, J. G. The Handling and Marketing of the Arizona-Egyptian Cotton of the Salt River Valley, U. S. Dept. Agr., Bul. 311, 1915.

NOTE.—This bulletin should be of interest to farmers of the Imperial Valley and others located in sections where staple cotton is grown, and to cotton buyers generally.

61187°—Bull. 458—17——1

of marking, tagging, and sampling the bales, concentrating the cotton into small lots of a few bales each, and into minimum carload lots for compression.

Investigations were also made to determine the feasibility of marketing the Durango cotton direct to spinning mills at prices equal to those obtained by growers of staple cotton in the Mississippi Delta and other sections, where cotton of like staple is grown in sufficient quantities to interest spinners of fine yarns. This work was inaugurated through the growers' association, which seems to be successfully accomplishing the purpose for which it was organized.

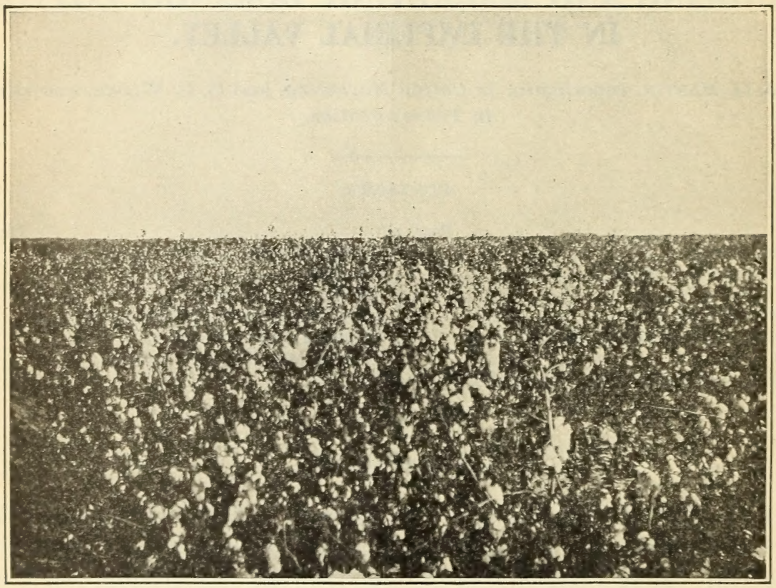

FIG. 1.—A well-grown field of Durango cotton.

NECESSITY FOR CLEAN PICKING.

The boll of the Durango cotton is of the five-lock formation, slightly smaller than the boll of Mebane's "Triumph" or the Rowden varieties of short-staple cotton grown in the Imperial Valley, though not of sufficient difference in size to make clean picking noticeably more difficult.

The Durango fiber is strong, and has already attracted the attention of the cotton trade and spinners of fine and mercerized yarns in the United States. This cotton is utilized in the manufacture of fine goods, and for this purpose it must be free of motes and leaf so that the yarn may be spun evenly and be of uniform strength. In order to insure quick sales of cotton at good prices it should be picked as clean of leaf and other extraneous matter as possible. The

cotton mills that make fancy and high-class goods are willing to pay a premium for clean and well-handled cotton of the extra-staple varieties, as less waste is produced in the carding and combing processes.

The mills that buy staple cotton prefer the highest grades and will not accept cotton of lower grades than Strict Middling until quite late in the season, when the higher grades become scarce and they are forced to use a small quantity of Middling, in spite of the fact that all the grades by that time have been lowered by the effects of frost, which kills the foliage of the cotton plants. The dried leaves break up and adhere to the cotton as it is picked. It is a well-known fact that after frost has killed the plants the picker finds it difficult to gather the cotton in a clean condition.

The lower grades of staple cotton are difficult to sell on a staple basis. They are usually bought by spinning mills, which make certain kinds of goods that ordinarily require staple cotton to give the cloth strength, but which need not be of the finest quality. When the goods are intended for a use for which a showy appearance is not necessary, they can be made from low-grade staple cotton, but it must be remembered that this class of goods necessarily sells at low prices, and, therefore, the price paid for the cotton from which this cloth is manufactured must be in proportion to the price at which the latter is sold. To show how rapidly staple cotton depreciates in value as the grades are lowered by the increasing quantity of leaf contained in the seed cotton, the following statement of prices is given.

In making the following sales in the Imperial Valley, Strict Good Middling cotton of $1\frac{3}{16}$-inch staple was taken as the basis of value, since it represented the early and clean-picked cotton.

Grade.	Net price received by grower.
Strict Good Middling	17.30 cents.
Good Middling	17.05 cents, or 25 points less than Strict Good Middling.
Strict Middling	16.50 cents, or 80 points less than Strict Good Middling.
Middling	15.75 cents, or 155 points less than Strict Good Middling.
Strict Low Middling	14.00 cents, or 330 points less than Strict Good Middling.

This means a difference of 330 points between the highest and the lowest grade shown, or a loss to the grower of $16.50 for a 500-pound bale of cotton of the grade of Strict Low Middling, because the cotton contained "picks" and leaf and had been poorly ginned. There was also increased difficulty in selling low-grade staple cotton. At times, in order to interest the mills in the purchase of the lower grades of staple cotton, it was necessary to offer it at much wider differences between grades.

At present there is available a plentiful supply of pickers, including white settlers, Indians, Mexicans, Hindus, and Japanese, Chinese,

and negro pickers. The kind of work done and the resulting quality of the cotton depend largely, if not wholly, on the attention given to the matter by the growers themselves. Pickers of the same race were observed to give very different results according to the instructions and supervision given.

CARE OF SEED COTTON.

The gins in the Imperial Valley are located at the towns of Calexico, Heber, El Centro, Seeley, Holtville, Brawley, Wiest, and Calipatria, and there is a roller gin at Dixieland. As a rule, the cotton gins have no available storage facilities for taking care of the seed cotton, nor has the grower, who is in the habit of loading his

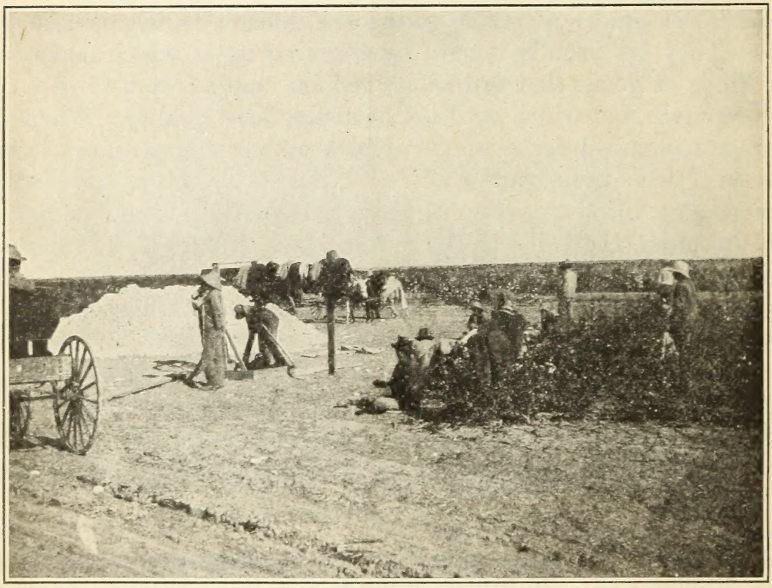

FIG. 2.—Seed cotton left on ground awaiting transportation to the gin.

cotton on the wagon as it is picked in the field and hauling it directly to the gin, where it is left on the wagon until it can be ginned. In the meantime the cotton that is being picked is placed in piles on the ground in the field to await the return of the wagon. (See fig. 2.) This careless manner of handling the seed cotton causes it to gather up leaf and trash from the ground when the wagon is being loaded. If the ground is damp, from irrigation or other cause, and the pile of cotton is not removed for some time, the cotton on the bottom of the pile will heat and become damaged as a consequence.

The amount of rainfall in the Imperial Valley is so small that it is not absolutely necessary for the grower to have houses in which to

store his seed cotton; but if he does not have at least two wagons so that one or the other may be always in the field to be filled with cotton as the pickers gather it, he should have tarpaulins or building paper spread on the ground so that the cotton may be emptied on them as it is picked. This method will keep the cotton clean and also will protect it from the dampness of the ground.

One cotton plantation in the valley has had installed at its local railroad station an automatic loader, driven by a gasoline engine, for use in transferring the seed cotton from the wagons to the cars. Attached to this machine is a cleaning device, and when the cotton is conveyed by suction from the wagon to the freight cars it is drawn over a grating through which fall the leaf and other impurities. This process of cleaning the cotton before it is ginned has been found to be of considerable value, as it not only serves to blow out the dust, but also removes enough leaf to raise the cotton in grade. Besides this arrangement for increasing the grade of its cotton, the plantation is very careful in picking and handling it, and the increase in price which it secured for cotton during 1915 should satisfy any farmer as to the importance of giving the very best care to the handling of seed cotton.

GINNING DURANGO COTTON.

It has been difficult to impress upon the ginners in the Imperial Valley the importance of ginning the Durango long-staple cotton smoothly and free of neps. The importance of proper handling and ginning of cotton, especially in long-staple districts, can not be overemphasized. A good staple produced from pure pedigreed seed, if ginned green or damp or with gin saws running too fast, may be damaged in value from $5 to $25 or more a bale. On the basis of recent investigations by the Department of Agriculture the following suggestions are offered:

All cotton should be thoroughly dry before it is ginned. It is not possible for the ginner to turn out from green or damp cotton a good, smooth sample free from gin cutting and nepping.

Gin manufacturers agree that a reasonable speed of the saw shaft does not materially affect the quality of ginning, provided the brushes remove the lint from the saw teeth. It has been shown, however, that a proper speed is from 325 to 375 revolutions per minute on a 12-inch saw and from 375 to 425 revolutions per minute on a 10-inch saw.

Brushes should always be kept in the best condition and should be set so that the bristles reach to the bottom of the saw teeth.

The speed of the brush should be from 1,500 to 1,600 revolutions per minute. Whenever possible a brush driven independently of the

saw shaft is recommended. By this arrangement any change in the speed of the saw shaft does not affect the speed of the brush.

Other things being equal, it is impossible to lay too much stress on the condition of the roll in the ginning of long-staple cotton. It is impossible for the saws to pass through a hard roll without cutting or nepping the fiber. What is known as a slack or soft roll should be used for ginning long-staple cotton. This roll should be run just hard enough to prevent breaking, and the feed should be adjusted so as to keep it as nearly as possible of the same consistency throughout its entire length.

The huller breast is recommended in preference to the single-rib type for ginning long-staple cotton. The chief reason for recommending this type is that a more uniform roll can be made, and each lock of seed cotton is more thoroughly loosened before it reaches the gin roll. The huller breast also takes out the large trash.

The gins of the valley are all practically new and can be made to do excellent work if the ginner understands his machinery and is willing to make the effort to turn out cotton that is considered "well handled."

After impressing upon the local ginners the importance of ginning Durango smoothly, it was found that several of them were willing to make the necessary adjustments on their machines with a view to turning out first-class work, which they realized would bring to them a volume of trade which would more than reimburse them for the extra care taken and the reduced output. The results obtained so far have been very satisfactory to the grower of Durango as well as the ginner, as both have profited through the results of good ginning.

NECESSITY FOR GOOD BALING AND ADEQUATE COVERING.

The cotton, as it passes from the saws of the gin through the condenser, should come out in smooth and even layers; and if it is conveyed to the press box by air blast, the ginner should see that the cotton is not roped by the suction of the air, which sometimes twists it into short lengths roughly resembling cotton rope. Roughly handled or poorly condensed cotton that has been subjected to further impairment by roping, or twisting, will not press into the bale evenly and will be detected when the cotton is sampled, which will reduce its value materially when it is marketed. The mills that make fine yarns will not buy such cotton except at a considerable discount from the price usually paid for well-handled cotton of the same grade, since the latter produces less waste and gives less trouble in manufacturing processes. For this reason, if the cotton is condensed smoothly and evenly and is carefully conveyed to the press box and packed

into the bale in even layers, the samples that are drawn from the bale will be even and attractive to buyers.

When the bale arrives at the mill and is opened, the cotton can be taken off the bale in layers and mixed with other cotton with the least amount of labor. When such cotton is run through the pickers, cards, and combers, it not only will be easier to spin than cotton that has been carelessly handled, but the loss in waste will be much less, and the grower will reap the benefits to be derived from a careful ginning, baling, and covering of his cotton.

Up to the present time the local ginners have not given enough attention to this matter, with the result that some of the bales of

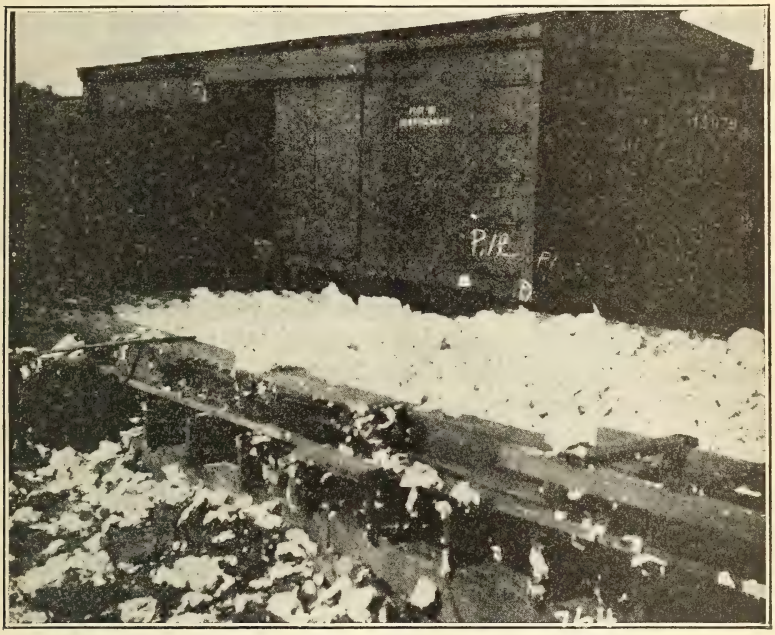

FIG. 3.—Pickings from one car of country-damaged cotton.

cotton on sampling have resembled repacked cotton. The growers and ginners of the valley can not afford to allow this loss to continue.

It is a well-known fact that the American square bale is put up in very poor material for handling and storing, and is the most insufficiently covered bale put on the world's cotton markets.[1] This complaint has been made not only by the spinning mills in the United States, but by those in Canada, England, and Europe. The loss in weight and damage to cotton that occurs while it is in transit

[1] Taylor, Fred, Griffith, D. C., and Atkinson, C. E. Ginning Information for Farmers. U. S. Dept. Agr., Farmers' Bul. 764, 1916.

is charged indirectly to the farmer. This would be understood readily by the grower if he were aware of the enormous amount of loose cotton which has to be picked from the bale while in transit because of the present quality of covering used.

The covering of the cotton of the Imperial Valley has been no exception to this unfortunate general rule. Sugar bags, reworked bagging, and bagging of too light quality have been used as coverings with much resulting waste. A good quality of new bagging or a heavy burlap of sufficient strength to withstand rough handling should be used in every case.

It has been estimated that the "city crop" of cotton for the entire South during 1915 amounted to approximately 100,000 bales. This total includes the samples that are necessary in selling cotton, but the greater part of the amount is composed of damaged cotton caused by inadequate covering and careless handling in transit. (See fig. 3.)

TAGGING, MARKING, BRANDING, AND WEIGHING.

As the Durango cotton varies so much in value according to the length of staple, character of the fiber, and the care with which it is picked and handled (which can give it a market value of almost, if not quite, double the value of short-staple cotton), it is essential that the bale should be identified properly. A good method consists of attaching to the bale a strong paper tag bearing a number, and also by marking legibly in ink on the bagging covering the bale. These marks will serve to identify the cotton in the course of shipment from point of origin to destination, and thus will prevent the good cotton from being mixed inadvertently with cotton of less value. The laborers who handle a bale of cotton from the time it is baled at the gin to the time it reaches its destination at the spinning mill are ignorant of its superior value. For these reasons it is urgent that the ginner tag the bale carefully and mark the grower's initials in ink on the head of the bale,[1] which will insure its identification at the compress. These marks also serve as a record for the association that handles the cotton or for the purchaser of the cotton.

When the cotton is delivered at the compress, a substantial tag with two perforated coupons attached is fastened to each bale. The tag and each coupon bear the same number. The bales are then listed and stored. If the grower should ask for the gin records he will be shown the list giving the corresponding gin-tag numbers and weight of the bales.

[1] Placing the grower's mark on the head of the bale is preferable to placing it on the side, as when the cotton is compressed the bagging on the end of the bale is first tucked in, preventing the initials, or marks, from being obliterated and serving to record the ownership of the bale, should there be any question as to its identity when it is opened at the mill.

The cotton is classed by means of tagged samples, and the samples are assembled in uniform lots. A list is then sent to the compress with instructions that certain bales be remarked with code words, such as "THAT," "SAFE," "PAST," etc.,[1] for identification, and that these bales be assembled, compressed, and, possibly, loaded for shipment. It is important that these new marks be large enough to be read easily and that a good quality of ink be used for this purpose, as the transportation companies follow these marks exclusively and treat each such lot of cotton, which may be composed of many bales, as an individual shipment. It is a common practice among shippers, in addition to the identification marks usually affixed, to brand their cotton to distinguish it as belonging to a special shipper.

In the early days of the cotton industry in the Imperial Valley there were no compresses, all the cotton being shipped out by gin weight only. In later years compresses have been installed, and as it is customary in the cotton trade to accept the weights as given by them, inasmuch as there is usually a certified, or public, weigher to oversee this matter, thus insuring accurate results, cotton producers in the Imperial Valley likewise have come to accept compress weights as correct.

STORAGE FACILITIES.

The facilities for the storage of cotton in the Imperial Valley are very poor and limited. This is probably due to the fact that the cotton industry in that locality is in its youth, and also to the small percentage of rainfall, which averages about 2½ inches annually. Many of the growers in the valley assume that cotton can be laid on the ground and left there without deterioration until the prospective purchaser is ready to move it to the compress for compression and shipment. (See fig. 4.) This assumption is not justified, for during the past year cotton which has been exposed has been damaged as much in this section because of negligence on the part of the grower as it is damaged in the South where the rainfall is heavy and cotton is left unprotected on the ground.

According to present practice in the Imperial Valley, after the cotton is baled at the gin it is thrown out on the gin yard without the precaution of placing dunnage underneath in order to allow free circulation of the air on the lower side of the bales. When it is removed to the yard of the local warehouse the bales receive no better care, but are placed on end on the bare ground, where they remain unprotected until they are sent to the compress. Fortunately the cotton does not

[1] For convenience and regularity, words of four letters each are generally used.

remain very long either in the gin yard or in the warehouse yard, but during the unusual weather conditions that prevailed during the marketing season of 1914-15, when the demand for cotton was poor and prices were correspondingly low, and the grower was forced to carry over some of his crop until the fall of 1915, much of the cotton was "docked" or penalized from 5 to 20 pounds per bale on account of country damage; that is, much rotten or damaged cotton was picked off each bale before the bale was sold. This loss was attributable directly to the practice of storing the bales on the bare ground at the gin and in the warehouse yard. Country damage occurs on the farms, in the gin yards, warehouse yards, and the compress yards or wherever the bales are left standing or lying on damp or wet ground. There

FIG. 4.—Cotton lying on the ground, subject to country damage.

was an unusual amount of rainfall during the season mentioned, but if the bales had been placed on dunnage there would have been no damage to the cotton. (See fig. 5.) Even though the ground may appear to be dry, there is always enough dampness from it to injure the fibers.

There is a clause in the marine insurance policies that covers country damage, and this cost for insuring the shipper's cotton against loss by country damage is charged back directly to the grower, inasmuch as the shipper calculates the cost of insurance and deducts it from the price to be paid to the cotton grower.

Sheds are not absolutely necessary in the Imperial Valley, as the rainfall is not sufficient to do any great amount of damage pro-

vided the bales are on dunnage and are rolled over after a rain so they may dry out on all sides. Of course, sheds would prevent a certain amount of loss in weight by protecting the cotton from the sun. For its weight and size a bale of cotton is the most valuable farm product grown in the valley, and therefore is entitled to as much care as any of the other crops produced.

SAMPLING.

The method of sampling the Durango cotton is similar to that followed throughout the South where staple cotton is bought and sold; that is, the bagging on the bale is cut open on one side in a crescent shape about 18 inches long, usually between the second and third

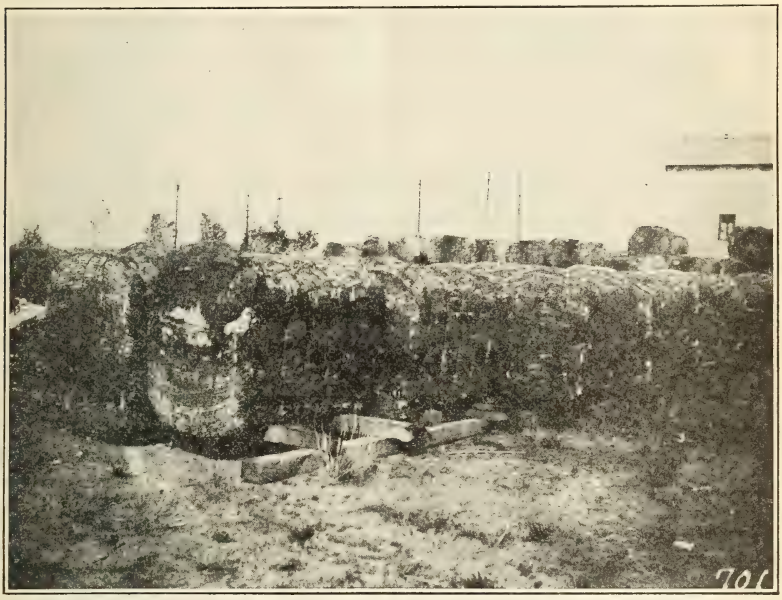

FIG. 5.—Cotton properly protected from country damage by dunnage.

band, and the flap thus made in the bagging is laid back. The first layer of cotton, which is generally dirty or discolored by the bagging, is pulled off and discarded. In order to obtain a representative sample it is necessary to secure the cotton from deeper in the bale and to draw it out in even and smooth layers. This procedure is repeated on the opposite side of the bale, after which one of the coupons is torn from the tag on the bale and placed between the two samples just drawn.

More skill in sampling is required than one not familiar with the cotton trade would suppose, and, therefore, it is important to both buyer and seller that the samples be pulled carefully and be representative of the bale from which they are taken. In drawing a

sample it is essential that the sampler should understand how to remove from the bale the cotton that may be discolored by the bagging or by dirt or mud, and at the same time he should take out any gin fall that may be in the sample, but he must be careful not to change the grade of the sample either by rough handling or by picking it to the extent that it will not represent the bale from which it was taken. When the cotton arrives at the mill or other destination and is resampled, if it is found to be not as represented, the purchaser will either reject it or make a claim for the difference in value between the original grade by which it was sold and that shown by the redrawn sample.

The present method of cutting the bale open and sampling the cotton each time a prospective purchaser wishes to examine it is an abuse that not only subjects the bale to loss in weight and otherwise damages it, but also increases the risk of fire. With the continuance of this custom it will be difficult to avoid the resampling of cotton, especially of staple cotton, in view of the fact that there is such a wide variation in the price of such cotton, according to the length of the staple and its grade. When a buyer contemplates paying a premium for a lot of staple cotton, it will be seen readily that his reasons for wishing to sample the cotton beforehand and pass judgment upon it personally are justified.

CLASSING DURANGO COTTON.

The Durango is a new variety of upland-staple cotton developed by the United States Department of Agriculture[1] and introduced into the Imperial Valley during the year 1910 as a long-staple cotton suited to the local climatic conditions. The lack of rainfall and the long and hot season in this valley make the section ideal for the growing of cotton of long staple and of a bright and bloomy color, both essential qualities in the manufacture of fine yarn. Of the varieties tried, it was found that the Durango cotton responded best to the conditions existing in the Imperial Valley; hence this variety for that locality is recommended and encouraged by the United States Department of Agriculture.

There are no established types or standards that may be used for classing the Durango cotton other than the Official Cotton Standards of the United States for grade and the standards for length used by shippers of upland-staple varieties throughout the southern staple districts, which are $1\frac{1}{16}$ inches, $1\frac{1}{8}$ inches, $1\frac{3}{16}$ inches, $1\frac{1}{4}$ inches, $1\frac{5}{16}$ inches, etc. The Durango cotton grown by irrigation in the Im-

[1] Cook, O. F., Durango Cotton in the Imperial Valley. *In* U. S. Dept. Agr. Bur. Plant Indus. Circular 111, pages 11–22, 1913.

McLachlan, Argyle. Community Production of Durango Cotton in the Imperial Valley. U. S. Dept. Agr. Bul. 324, 1915.

perial Valley is commonly of a brighter and more "bloomy" color than the staple cotton grown in the South; it contains less leaf in the early part of the picking season, but more fine or pulverized leaf during the latter part of the season than is found in cotton of similar grades grown in the Mississippi Delta.

The actual tagged samples representing the grades and staple of the lots of cotton classed were sent to cotton-mill brokers and direct to the spinning mills that manufacture fine yarns. Each list of 50 bales sent out, as shown by samples, represented cotton of a certain length of staple and grade. For example, lot No. 1 (50 bales), marked "WILL," represented Strict Middling and Good Middling, $1\frac{1}{8}$-inch staple; lot No. 2, marked "MIKE," Good Middling and better, $1\frac{1}{8}$-inch staple; lot No. 3, marked "TOMY," Strict Middling and Good Middling, $1\frac{3}{16}$ inch; lot No. 4, marked "TIME," Good Middling and better, $1\frac{3}{16}$ inch; lot No. 5, marked "EDGE,' Strict Middling and Good Middling, $1\frac{1}{4}$ inch; and so on. In this way types were established which represented all combinations of grades and staples raised in the valley.

After types were established and recorded as a basis for trading between the association and the brokers and mills, it was a comparatively simple matter to class the cotton equal to the types. This method of classing was carried on throughout the season, and proved satisfactory. The spinner who possessed types knew exactly the staple, grade, and character of the cotton he was buying when he ordered cotton equal to a certain type.

When samples were sent to the association's sample room for classing, each bale was graded, stapled, and given a mark. These marks were entered in the type book as being equal to an established type of similar grade and staple.

During the early fall Durango cotton which was picked with care was of a superior grade, much of it being Strict Good Middling. Even to the time of the first heavy frost, November 12, 1915, which occurred from 15 to 20 days earlier than usual, the cotton was of a very good quality and grade when care was exercised in its picking and ginning. After this frost, which killed the cotton plant, the grades were much lower on account of the difficulty of picking the cotton free of leaf. Cotton which was still in the boll was lowered in grade by the effects of the frost, which caused discoloration from light tinged spots to a deep yellow tinge throughout the cotton.

LENGTH AND CHARACTER OF DURANGO STAPLE.

The Durango cotton varies in length of staple from $1\frac{1}{16}$ inch to $1\frac{5}{16}$ inch. Its character is very good; the fiber is silky and has considerable spirality, it is exceptionally strong and even in length, and free

from waste, when grown in rich soil which is sufficiently irrigated and when the cotton has been carefully picked. The $1\frac{1}{16}$-inch staple Durango cotton and the greater portion of the soft and wasty-fiber cotton grown in the Imperial Valley during the season 1915–16, was found to be volunteer or "ratooned" Durango.[1]

The Durango cotton of $1\frac{1}{8}$-inch staple may be produced by several different causes. Durango seed from $1\frac{1}{8}$-inch staple will reproduce cotton of similar staple, provided it is planted in soil of equal richness, given the proper cultivation, and is sufficiently irrigated. The same rule holds good in the production of $1\frac{3}{16}$-inch, $1\frac{1}{4}$-inch, and $1\frac{5}{16}$-inch staple cotton from Durango seed. Cotton picked from bolls killed by frost will be found to be of weaker staple than that gathered from mature bolls.

The various lengths of staple of Durango cotton may be attributed to the quality of the seed planted and the condition of the soil, such as soft, hard, or sandy loam, which determines the readiness of the soil to absorb water when irrigated and its capacity to retain moisture. It is very important that the land should be level, so it can be irrigated evenly, the water being distributed equally over the field. If the soil is of equal quality over such a field, the length of the staple of cotton grown therein will be uniform. When the length of staple varies in the same seed in the same or in adjacent fields, it is usually because of a difference in the quality of the soil or because the land is not level, which prevents uniform irrigation.

Studies indicate that the length of staple will deteriorate if the seed is planted in soil that is depleted of nitrogen and humus matter, or in soil which contains too much alkali. It is said that the staple will also deteriorate if the land has not been put into good condition beforehand, or if it is not well cultivated afterwards and given the proper amount of water.

The Durango staple will increase in length, strength, and silkiness, provided the seed is planted in good, rich soil. A light loam that has been planted in alfalfa for several years and pastured and then put into good condition, cultivated well, and irrigated throughout the growing season should produce an excellent staple. There are records of Durango cotton grown in such land which stapled $1\frac{5}{16}$ inches in length and which sold at top prices in eastern markets.

MARKETING OF DURANGO COTTON.

During the season 1915–16 Durango cotton of the Imperial Valley was marketed in various ways, the growers' association utilizing existing methods and also devising others of its own.

[1] Scofield, C. S., Kearney, T. H., Brand, C. J., Cook, O. F., and Swingle, W. T., Community Production of Egyptian Cotton in the United States. U. S. Dept. Agr. Bul. 332, 1916; see page 25.

LOCAL BUYING IN THE IMPERIAL VALLEY.

There are several local buyers and several exporting firms, represented by local buyers, in the Imperial Valley. Their business is conducted in this locality on the same basis as it is in the small towns of the Southern States. The local buyer establishes his headquarters in one of the larger towns convenient to the cotton section in which he is operating. Either he has a local buyer stationed in each of the smaller neighboring towns where cotton is ginned or he keeps in direct touch with the ginner or warehouseman, usually by telephone. When he learns that there is cotton for sale at a certain town he immediately sends his buyer to examine and class this cotton and to offer the grower a price for it.

In the Imperial Valley the town of El Centro is centrally located for the cotton business, and the majority of the buyers have their headquarters there. The town of Calexico, which is near the Mexican border, has a compress and a number of modern gins, and draws cotton from both the American and the Mexican side of the border. The receipts at Calexico are larger than at any other point in the valley, and the buyers in El Centro will visit Calexico whenever cotton is offered for sale at that point. When a grower wishes to sell to local buyers, he informs the manager of the compress of the fact. Employees at the compress take samples and lay them out on tables. The buyers who are interested are invited to examine these samples and to submit sealed bids to the manager. After all the bids are in they are opened by the manager and the bids are compared, the highest bidder being awarded the cotton at the price he has offered. The compress then weighs the cotton, if it has not been weighed previously, and the buyer gives his check to the grower in return for the compress receipts covering the cotton in question, and the transaction is closed. This method of selling is satisfactory to the grower, as he knows how much he will receive for his cotton, the sale is made within a day, and he usually receives his money promptly.

In making sales of cotton in the smaller towns, such as Imperial (where there is a compress), El Centro, Seeley, Holtville, and Brawley, the buyer interviews the grower who has a bale or a number of bales to sell; he examines the cotton and makes the grower an offer for it. If there should be more than one buyer present, the farmer sells his cotton to the buyer offering him the best price, while if there is but one buyer the grower, if forced to sell the same day, has to accept whatever price the buyer offers. The price paid by the local buyer is based upon the quotations for similar cotton in the ports of New Orleans and Galveston, less the

broker's commission, freight to the ports, compressing, and other compress charges, and all other local charges to which the cotton is subject, plus the commission or profit to the original buyer. It is understood, of course, that the buyer purchases the cotton at such a price as will insure a profit on the transaction in the event of any change in the market before he in turn can sell to the broker or direct to the mill, as the circumstances warrant.

The Imperial Valley Long-Staple Cotton Growers' Association sold some of its cotton through these buyers, who also handled all of the cotton produced by growers in the valley who did not belong to the growers' association.

DIRECT MARKETING BY THE GROWERS' ASSOCIATION.

In marketing its Durango cotton independently, the growers' association had samples drawn from both sides of each bale of cotton as previously described, and coupons from the tags on the bales were placed in the samples. The samples were then sent to the office of the growers' association, where they were laid out on the tables to be graded and stapled. Cotton of similar grade and even lengths of staple was classed into lots of 50 bales each. A designating mark of four letters was placed on the wrapper covering the samples and the tag list was entered in the type book, with all information concerning the cotton, including grade, staple, ownership, and the type to which the lot was equal.

The samples were then sent to the prospective purchasers known by the association to be in the market for such cotton. On the arrival of the samples at the cotton mills, their classer examined them and if, in his judgment, the cotton represented by the samples submitted was suitable for their requirements they asked for a firm offer. Upon receipt of the offer, if the price was considered reasonable by the mill treasurer, he accepted it or made a counter offer of a price which he considered as the market value of the cotton, or its value to his mill. These transactions were all carried on by telegraph, for, according to the custom of the trade, firm offers hold good only for the day, unless otherwise stated. For instance, the owner, whether he is the buyer, broker, or representative of the association, will usually offer cotton under the following terms: "We offer firm, Nell 50 bales, Mike 50 bales, at 20 cents f. o. b., and freight to mill." Limitation may be placed on an offer in many ways.

The marketing of staple cotton at full price is a difficult matter. It rests first on the ability of the classer to make up lots of 50 bales each of similar grade and equal length of staple. Then it is necessary to offer the cotton so as to secure the full market price, yet at the same time the final purchaser, the mill treasurer, must feel that

he is receiving full value for his money. To manage such sales to the satisfaction of all concerned requires a certain amount of skill and ability.

The demand for cotton is based on the activity of the yarn or goods market, which in turn hinges upon the style of goods being worn or utilized, and upon the general financial conditions. When the supply of cotton is unusually large, low prices with dull and inactive markets for staples must result. In times of prosperity naturally more money is spent on dress goods and other articles of fine quality than in seasons of financial depression, and there is a good demand for material at high prices. This demand means an active staple-cotton market and high prices, but, of course, the law of supply and demand applies to cotton as well as to any other commodity.

As previously stated, the high grades of cotton are those in greatest demand; in fact, a mill spinning fine yarns for the weaving of fancy and high-grade goods will not buy low-grade staple cotton. Staple cotton of the Durango variety ranges in length from $1\frac{1}{16}$ to $1\frac{5}{16}$ inches, and for each increase of one-sixteenth of an inch in length of staple in the grade of Strict Middling and Good Middling, and better, there is an increase in price of about 1 cent a pound. These differences in value between the various grades are not stable, but vary with the demand for the different lengths of staple, and also change with the grade and quality or character of the cotton. For instance, Good Middling, $1\frac{1}{4}$ inch, grown on poor land which has been insufficiently irrigated, will make irregular, soft, and fluffy fiber which will not equal in value cotton of the same grade and length of staple grown under proper conditions. As poor or faulty ginning also will reduce the value of the staple materially, in the marketing of long-staple cotton it is necessary to take into consideration every good quality and all defects, whether inherent or produced mechanically.

TRANSPORTATION FACILITIES AND RATES.

Although this bulletin discusses handling and marketing primarily with reference to the Durango cotton produced in the Imperial Valley, what is said concerning transportation rates and facilities applies to all classes of cotton grown there. So far as is known, prior to the season of 1916-17, little of the Imperial Valley cotton was exported to the Orient from Pacific coast ports. A small portion of it is consumed by the mills of the Southeast; some of it moves through the ports of Galveston and New Orleans to Europe; and some of it moves to those ports and thence by water to New York for consumption at interior mills.

The local rates from New York to the interior mills are the same for all cotton moving from any section by that route to ultimate points of consumption. Similarly the ocean rates from the ports of Galveston and New Orleans both to New York and to European ports are the same for all cotton, whether produced in the Imperial Valley or elsewhere. In considering the higher rate to market which is paid on Imperial Valley cotton, it is necessary to take into account merely that portion of it which applies from Imperial Valley points to the ports of Galveston and New Orleans.

Prior to the beginning of the production of cotton in the Salt River Valley of Arizona and in the Imperial Valley of California, the railroads west of El Paso, Tex., and Albuquerque, N. Mex., had had no experience in the transportation of cotton except in carload lots from the cotton belt destined to Pacific coast mills and to Pacific coast ports for exportation to the Orient. On the cotton shipped for consumption at Pacific coast mills, a transcontinental domestic rate of 95 cents per 100 pounds had been established, which rate included 10 cents for compression in transit. The through export rate from the cotton belt to the Orient via Pacific coast ports was very little, if any, higher than the domestic rate to Pacific coast cities, and, in dividing it, the amount received by the rail carriers for the haul to the Pacific coast was much less, of course, than the domestic rate to the Pacific coast.

When it became necessary to establish an eastbound transcontinental commodity rate for the cotton of the Imperial Valley, the through export rates to the Orient had been canceled, and the rail carriers were receiving for the haul from the cotton belt to the Pacific coast the same amount on both domestic and export shipments. With a rate thus established for the westbound movement, it was taken as a standard, and the eastbound rate was made the same.

The eastbound rate of 95 cents, including 10 cents for compression, leaving a net transportation rate of 85 cents, remained in effect till the summer of 1915, when it was raised to $1.05, including 15 cents for compression and leaving a net transportation rate of 90 cents. The advance of 5 cents in the net transportation charge was permitted by the Interstate Commerce Commission on the showing by the carrier of a higher cost of performing the eastbound service. The present proportional any-quantity rate on compressed cotton from both Galveston and New Orleans to New York is 25 cents per 100 pounds, which makes a through carload net rate from Imperial Valley points of $1.15.

The cotton acreage in the Imperial Valley has increased rapidly under the stimulus of the unusual conditions which recently have affected the world's markets, and apparently the existing high prices of cotton are sufficient at the present time to counterbalance a freight

rate higher than that paid by the cotton belt. Attention may be called, however, to the possible entry into the situation in the not distant future of new factors which may result in a lower rate by other routes.

Granted vessel space, it would be possible to move the Imperial Valley cotton to eastern United States and European markets through the Panama Canal from the port of San Pedro. Calexico, the southernmost point in the Imperial Valley, is 248 miles from San Pedro, and the carload cotton rate from all points in Imperial Valley to San Pedro is 40 cents per 100 pounds. Before the European war an ocean rate of $7 per ton was available through the canal from San Pedro to New York. If, after the close of the war, when a large tonnage of vessels will be released for peaceful commerce, the ocean rate is equally favorable, the freight charge by the canal route will be less than by rail, even with the additional expense of marine insurance and the cost of transfer at San Pedro from cars to vessel.

No figures are available to make a comparison of through rates to European ports via San Pedro with those via Galveston or New Orleans, but the rate via San Pedro under normal conditions would probably be the lower. The rail rate from the Imperial Valley to San Pedro is 65 cents less per hundred pounds than the rates to the Gulf ports, and it is not likely that the ocean rates from San Pedro to New York and to European ports would exceed the rates from the Gulf ports by so large an amount.

The freight rate alone is not always the determining factor in the selection of one route in preference to another. Consideration is given to questions of service, and an important element of service is the length of time in transit. The present average time by the rail-and-water route through Galveston or New Orleans is two weeks to either of those ports, plus an additional week to New York. Records of past sailings indicate that there would be an advantage in time in shipping to New York via San Pedro through the canal.

In connection with the water route through the canal, mention should be made of the railroad now under construction between San Diego and El Centro, the completion of which will give the valley an outlet for its cotton through an additional Pacific port. Although San Diego is 102 miles south of Los Angeles Harbor (San Pedro), and therefore somewhat nearer the Panama Canal, yet in view of the fact that the total distance from San Diego to New York is approximately 5,000 nautical miles, and that to Liverpool is in excess of 7,000 nautical miles, it is not likely that this slightly shorter distance from San Diego will make any difference in the ocean rate. With respect to the rail haul, however, the average distance from all cotton-ginning stations to San Diego will be 85 miles less than to San Pedro. If account be taken only of Imperial and Calexico, at which

stations about 80 per cent of all the cotton originates, the average distance will be 100 miles less. So great a decrease in the distance probably would have the effect of reducing the local rate to the Pacific port, with a consequent lessening of the through rate to New York and to European ports.

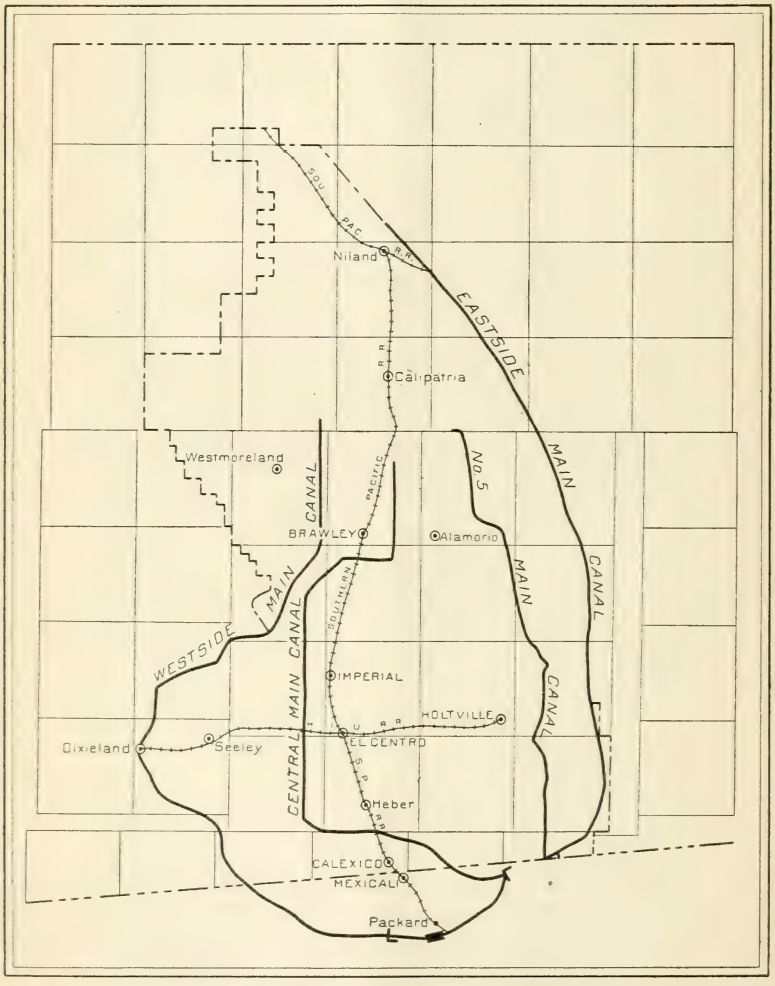

FIG. 6.—Map of the Imperial Valley.

The Imperial Valley is served by a 40-mile branch of the Southern Pacific Railroad, which extends south from Niland to Calexico on the Mexican boundary. (See fig. 6.) Connecting with the Southern Pacific at El Centro, the Holton Interurban, an independent railroad, extends east to Holtville, a distance of 10.5 miles, and west to Dixieland, a distance of 13.7 miles. On the Southern Pacific Railroad are located seven gins and two compresses, the compresses being at Im-

perial and Calexico. The through rates to eastern mills and markets are so adjusted as to make it more economical to compress the cotton in the valley than to forward it in flat bales uncompressed, as beyond Niland there are no compresses available until shipments reach the vicinity of San Antonio, Tex., some 1,200 miles from the point of production.

The tariffs require the payment of local charges from the ginning point to the compress point on delivery of every shipment at a compress. When the cotton has been compressed and is ready to be reshipped, the local charges which have been paid for the transportation to the compress point are refunded on such part of the outgoing cotton as moved to the compress point in carload lots. Five working days are allowed for the service of compression, but the local charges will not be refunded unless the cotton is reshipped within one year from the date of its arrival at the compress point. To this extent then the transportation arrangements are equivalent to the compression-in-transit privilege which prevails in the cotton belt.

No refund is made of the local transportation charges on cotton reaching the compress point in less-than-carload lots, and in this respect the situation is different from that of the cotton belt, where cotton moves on an any-quantity rate from the ginning point through the compress point, with privilege of compression in transit to market or to a seaport.

The tariffs further provide that the carrier will not assume the cost of unloading or reloading shipments at transit points; that is, at the compresses. This is in line with similar requirements of carriers in the cotton belt.

As there are three gins located north of Imperial, it is necessary to back haul some of the cotton in order to reach a compress. The situation thus differs very materially from the situation in the cotton belt, where the gins and compresses are more numerous and more widely distributed, and where the location of the compresses is such that a back haul is necessary only in very rare instances, if at all. Not only is there granted in the Imperial Valley the unusual privilege of a back haul in connection with the transit privilege of this kind, but, so far as concerns carload shipments, the back haul is made free of charge.

Little information is available as to the quantity of cotton shipped to compress points in less-than-carload lots, which incurs rail transportation expense in addition to the transcontinental rate for the eastbound movement. About one-third of the crop for the season of 1915–16 was marketed through the Imperial Valley Long Staple Cotton Growers' Association, and the records of the association show that less than 2 per cent of the cotton that it handled was

thus affected. The records do not show, however, from what stations these less-than-carload shipments were made, so that it is impossible to determine the aggregate additional rail transportation expense.

Gins are located on the Holton Interurban Railway. All cotton which is shipped from these gins to a compress must pay the local charges on this railroad to El Centro, no part of which is refunded. Beyond El Centro compression in transit is permitted, and the charges on carload shipments to compress points are refunded under Southern Pacific tariffs, as has been described above.

The excellent roads of the Imperial Valley, which are seldom disturbed by rainfall, make it more economical in some cases to haul cotton by autotrucks or wagons to compress points. In actual practice it would seem that a relatively small amount is hauled in this way. If the experience of the Imperial Valley Long Staple Cotton Growers' Association is representative of that of all the shippers in the valley, the amount so transported is slightly in excess of 3 per cent. In computing the total transportation expense, however, account must be taken of the cost of the haul by wagon and autotruck.

PUBLICATIONS OF THE U. S. DEPARTMENT OF AGRICULTURE RELATING TO COTTON.

AVAILABLE FOR FREE DISTRIBUTION.

Cotton Ginning Information for Farmers. (Farmers' Bulletin 764.)
Losses From Selling Cotton in the Seed. (Farmers' Bulletin 775.)
The Relation of Cotton Buying to Cotton Growing. (Department Bulletin 60.)
Cotton Warehouse Construction. (Department Bulletin 277.)
Custom Ginning as a Factor in Cotton-seed Deterioration. (Department Bulletin 288.)
Community Production of Durango Cotton in the Imperial Valley. (Department Bulletin 324.)
Manufacturing Tests of Cotton Fumigated with Hydrocyanic Acid Gas. (Department Bulletin 366.)
Disadvantages of Selling Cotton in the Seed. (Department Bulletin 375.)
Relation Between Primary Market Prices and Qualities of Cotton. (Department Bulletin 457.)
Improved Methods of Handling and Marketing Cotton. (Yearbook Separate 605.)

FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C.

Studies of Primary Cotton Market Conditions in Oklahoma. (Department Bulletin 36.) Price, 5 cents.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1917

1022734408